Curriculum Vitae

Carlos Maltzahn

December 10, 2019

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EMPLOYMENT HISTORY

2014–	**Adjunct Professor**, Computer Science Department, University of California, Santa Cruz.
2015–	**Director**, Center for Research in Open Source Softare (CROSS)
2013–2017	**Director**, UCSC/LANL Institute for Scalable Scientific Data Management (ISSDM), University of California, Santa Cruz, and Los Alamos National Lab, Los Alamos.
2010–2014	**Associate Adjunct Professor**, Computer Science Department, University of California, Santa Cruz.
2011–2012	**Visiting Scientist**, Ultrascale Systems Research Center, New Mexico Consortium, Los Alamos, NM.
2010–	**Director**, UCSC Systems Research Laboratory (SRL) (with Scott A. Brandt).
2008–2010	**Assistant Adjunct Professor**, Computer Science Department, University of California, Santa Cruz
2009–2013	**Associate Director**, UCSC/LANL Institute for Scalable Scientific Data Management, University of California, Santa Cruz, and Los Alamos National Lab, Los Alamos.
2007–2010	**Associate Director**, UCSC Systems Research Laboratory (SRL).
2005–2009	**Executive Director**, UCSC/LANL Institute for Scalable Scientific Data Management, University of California, Santa Cruz, and Los Alamos National Lab, Los Alamos.
2004–2008	**Assistant Research Computer Scientist**, Computer Science Department, Faculty Member, Storage Systems Research Center, University of California, Santa Cruz.
2003–2004	**Research Fellow**, Computer Science Department, University of California, Santa Cruz.
1999–2004	**Member of Technical Staff**, Performance Engineering, Network Appliance Inc, Sunnyvale, California
1994–1999	**Guest Researcher**, Digital Equipment Corporation / Compaq, Western Research Lab
1992–1994	**Research Assistant**, Computer Science Department, University of Colorado, Boulder
1987–1991	**Research Assistant**, Computer Science Department, University of Passau, Passau, Germany

EDUCATION

1999	Ph. D., Computer Science, University of Colorado at Boulder
1997	M. S., Computer Science, University of Colorado at Boulder
1991	Univ. Diplom, Informatik, University of Passau, Passau, Germany

Honors and Awards

H2. **Excellence in Teaching** Award, UCSC Baskin School of Engineering, 2015–2016.

H1. Springer Journal of Real-Time Systems Award for **Best Student Paper**, RTAS 2008.

Grants

G46. **Fujitsu Laboratories Ltd.**, "CROSS FY 2020 Membership," PI: Carlos Maltzahn, **$100,000**, July, 2019.

G45. **Seagate Technology, Inc.**, "CROSS FY 2020 Membership," PI: Carlos Maltzahn, **$100,000**, July, 2019.

G44. **Samsung Semiconductor, Inc.**, "CROSS FY 2020 Membership," PI: Carlos Maltzahn, **$100,000**, July, 2019.

G43. **Fujitsu Laboratories Ltd.**, "Data Transformation Framework for Big Data Analytics," PI: Carlos Maltzahn, **$50,000**, January-June, 2019.

G42. **Toshiba America Electronic Components, Inc.**, "CROSS CY 2019 Membership," PI: Carlos Maltzahn, **$100,000**, March, 2019.

G41. **Huawei Techologies Co. Ltd**, "CROSS CY 2019 Membership," PI: Carlos Maltzahn, **$100,000**, March, 2019.

G40. **National Science Foundation**, "Institute for Research and Innovation in Software for High Energy Physics (IRIS-HEP)," PI: Carlos Maltzahn with others, **$25,000,000** ($1,500,000 to UCSC), 2018-2023.

G39. **National Science Foundation**, "CSR: Medium: Declarative Programmable Storage," PI: Peter Alvaro, co-PI: Carlos Maltzahn, **$850,000**, 2018-2021.

G38. **Western Digital Corporation**, "CROSS FY 2019 Membership," PI: Carlos Maltzahn, **$100,000**, July, 2018.

G37. **Seagate Technology, Inc.**, "CROSS FY 2019 Membership," PI: Carlos Maltzahn, **$100,000**, July, 2018.

G36. **Samsung Semiconductor, Inc.**, "CROSS FY 2019 Membership," PI: Carlos Maltzahn, **$100,000**, July, 2018.

G35. **Toshiba America Electronic Components, Inc.**, "CROSS CY 2018 Membership," PI: Carlos Maltzahn, **$100,000**, March, 2018.

G34. **Micron Technologies, Inc.**, "CROSS CY 2018 Membership," PI: Carlos Maltzahn, **$100,000**, February, 2018.

G33. **Huawei Techologies Co. Ltd**, "CROSS CY 2018 Membership," PI: Carlos Maltzahn, **$100,000**, December, 2017.

G32. **Western Digital Corporation**, "CROSS FY 2018 Membership," PI: Carlos Maltzahn, **$100,000**, July, 2017.

G31. **Seagate Technology, Inc.**, "CROSS FY 2018 Membership," PI: Carlos Maltzahn, **$100,000**, July, 2017.

G30. **National Science Foundation**, "CSR: Medium: Collaborative Research: Data Center Scale Programmable Storage," PIs: Carlos Maltzahn, Dirk Grunwald (University of Colorado, Boulder, lead), **$1,000,000** ($500,000 to UCSC), 2017-2020.

G29. **Toshiba America Electronic Components, Inc.**, "CROSS CY 2017 Membership," PI: Carlos Maltzahn, **$100,000**, January, 2017.

G28. **Micron Technologies, Inc.**, "CROSS CY 2017 Membership," PI: Carlos Maltzahn, **$100,000**, January, 2017.

G27. **Seagate Technology, Inc.**, "CROSS FY 2017 Membership," PI: Carlos Maltzahn, **$100,000**, September, 2016.

G26. **US Department of Energy**, "Science-Driven Data Management for Multi-Tiered Storage," PIs: Carlos Maltzahn, Scott Klasky (Oak Ridge National Laboratory, lead), Jay Lofstead (Sandia National Laboratories), Manish Parashar (Rutgers University), **$3,700,000** ($445,000 to UCSC), 2016-2019.

G25. **National Science Foundation**, "SI2-SSI: Big Weather Web: A common and sustainable big data infrastructure in support of weather prediction research and education in universities," PI: Carlos Maltzahn (lead), co-PIs: Brian Ancell (Texas Tech University), William J. Capehart (South Dakota School of Mines and Technology), Clark Evans (University of Wisconsin, Milwaukee), Robert Fovell (SUNY at Albany), Steven Greybush (Penn State University), Gretchen Mullendore (University of North Dakota), Mohan Ramamurthy (Unidata, University Corporation for Atmospheric Research), Russ Schumacher (Colorado State University), **$2,000,000** ($855,000 to UCSC), 2015–2018.

G24. **Micron Technologies, Inc.**, "CROSS CY 2016 Membership," PI: Carlos Maltzahn, **$100,000**, January, 2016.

G23. **SK Hynix Memory Solutions, Inc.**, "CROSS CY 2016 Membership," PI: Carlos Maltzahn, **$100,000**, January, 2016.

G22. **Toshiba America Electronic Components, Inc.**, "CROSS CY 2016 Membership," PI: Carlos Maltzahn, **$100,000**, January, 2016.

G21. **Sage Weil**, "Sage Weil Expendable Gift for Maltzahn Research," PI: Carlos Maltzahn, **$1,000,000**, 2015-indefinite.

G20. **Sage Weil**, "Sage Weil Fund for Maltzahn Research (FFE)," PI: Carlos Maltzahn, **$1,000,000**, 2015-indefinite.

G19. **Sandia National Laboratories**, "Extending IO Research Advancements onto New Platforms and Architectures," PI: Carlos Maltzahn, **$323,000**, 2015–2016.

G18. **National Aeronautics and Space Administration (NASA) University Affiliated Research Center's (UARC) Aligned Research Program (ARP)**, "DWiL: Data Warehouse in a Laptop," PI: Carlos Maltzahn, co-PIs: Scott A. Brandt, Mark Hansen (UC Berkeley), **$141,500**, 2013–2014.

G17. **US Department of Energy, Sandia National Laboratories**, "Investigation of exascale-ready coordination frameworks for integrated application workflow management (Continuation)," PI: Carlos Maltzahn, **$52,000**, 2013–2014.

G16. **National Science Foundation**, "BCC: Developing a comprehensive regional approach to data set integration to support data-intensive research in education in Silicon Valley," PI: Rodney T. Ogawa, co-PIs: Ronald Glass, Scott A. Brandt, Carlos Maltzahn, Douglas G. Bonett, **$356,000**, 2013–2014.

G15. **Google Research Award**, PI: Carlos Maltzahn, co-PI: Katia Obraczka, **$51,500**, 2013–2014.

G14. **SAP Labs, LLC**, "Research Donation," PI: Carlos Maltzahn, **$130,000**, 2013–indefinite.

G13. **US Department of Energy, Sandia National Laboratories**, "Investigation of exascale-ready coordination frameworks for integrated application workflow management," PI: Carlos Maltzahn, **$100,000**, 2013–2014.

G12. **US Department of Energy Los Alamos National Security**, "Institute for Scalable Scientific Data Management (ISSDM)," PI: Carlos Maltzahn, co-PI: Scott A. Brandt, **$1,500,000**, 2011–2016.

G11. **US Department of Energy Office of Science**, "Adding Data Management Services to Parallel File Systems," PI: Scott A. Brandt, co-PIs: Maya B. Gokhale (LLNL), Carlos Maltzahn, Neoklis Polyzotis, Wang-Chiew Tan, **$1,000,000**, 2010–2013.

G10. **SAP Labs, LLC**, "Machine Learning Research Donation," PI: Scott A. Brandt, co-PI: Carlos Maltzahn, **$100,000**, 2010–indefinite.

G9. **SAP Labs, LLC**, "Ceph Research for SAP", PI: Scot A. Brandt, co-PIs: Carlos Maltzahn, Neoklis Polyzotis, **$50,000**, 2009–2011.

G8. **Yahoo!**, "Haceph: Scalable Naming and Shared Atomic Appends for Hadoop using Ceph," PI: Carlos Maltzahn, co-PI: Scott A. Brandt, **$20,000**, 2009–indefinite.

G7. **National Science Foundation**, "End-to-End Performance Management for Large Distributed Storage: Research Experience for Undergraduates Supplement," PI: Scott A. Brandt, Co-PI: Carlos Maltzahn, **$16,000**, 2009–2010.

G6. **UC Lab Research Program**, "RADIX: Data Center Performance Monitoring and Management", PI: Scott A. Brandt, Co-PIs: Nathan Debardeleben (LANL), Carlos Maltzahn, **$1,100,000**, 2009–2011.

G5. **Microsoft**, "Research on Internet Mining", PI: Carlos Maltzahn, **$9,000**, 2008–indefinite.

G4. **US Department of Energy Office of Science**, "Petascale Data Storage Institute", PI: Darrell D. E. Long, co-PIs: Scott A. Brandt, Carlos Maltzahn, Ethan L. Miller, in collaboration with Carnegie Mellon University, University of Michigan, Los Alamos National Laboratory, Sandia National Laboratory, Lawrence Berkeley National Laboratory, Oak Ridge National Laboratory, and Pacific Northwest National Laboratory, **$11,250,000** ($1,500,000 to UCSC), 2006–2011.

G3. **National Science Foundation**, "End-to-End Performance Management for Large Distributed Storage", National Science Foundation, PI: Scott A. Brandt, co-PIs: Richard Golding, Carlos Maltzahn, Theodore Wong, **$999,840**, 2006–2009.

G2. **Network Appliance** "Linking File System Research", PI: Scott A. Brandt, co-PI: Carlos Maltzahn, **$45,000**, 2005–2006.

G1. **Lawrence Livermore National Laboratory, Los Alamos National Laboratory, Sandia National Laboratory**, "Scalable File Systems for High Performance Computing", PI: Scott A. Brandt, co-PIs: Martín Abadi, Darrell D. E. Long, Carlos Maltzahn, Ethan L. Miller, **$250,000**, 2005–2007.

SCHOLARLY AND CREATIVE WORK

Contributions to Books

CH1. Matthias Jarke, Carlos Maltzahn, Thomas Rose, "ConceptTalk: Team Support in IS Development," in M. Jarke: Database Application Engineering with DAIDA, Springer 1993, 441–462

Journal Articles

J13. Philip Kufeldt, Carlos Maltzahn, Tim Feldman, Christine Green, Grant Mackey, Shingo Tanaka, "Eusocial Storage Devices - Offloading Data Management to Storage Devices that Can Act Collectively," *;login: The USENIX Magazine*, Volume 43, Number 2, pp. 16–22, Summer, 2018.

J12. Joshua Hacker, John Exby, David Gill, Ivo Jimenez, Carlos Maltzahn, Timothy See, Gretchen Mullendore, Kathryn Fossell, "A containerized mesoscale model and analysis toolkit to accelerate classroom learning, collaborative research, and uncertainty quantification," *Bull. Amer. Meteor. Soc.* Volume 98, pp. 1129—1138, 2017.

J11. Scott A. Klasky, Hasan Abbasi, Mark Ainsworth, Jong Choi, Matthew Curry, T. Kurc, Qing Liu, Jay Lofstead, Carlos Maltzahn, Manish Parashar, Norbert Podhorszki, Eric Suchyta, Fang Wang, Matthew Wolf, C. S. Chang, M. Churchill, S. Ethier, "Exascale Storage Systems the SIRIUS Way," *Journal of Physics: Conference Series*, Volume 759, Number 1, pp. 012095, November 11, 2016.

J10. Ivo Jimenez, Michael Sevilla, Noah Watkins, Carlos Maltzahn, Jay Lofstead, Kathryn Mohror, Remzi Arpaci-Dusseau, and Andrea Arpaci-Dusseau, "Standing on the Shoulders of Giants by Managing Scientific Experiments Like Software," *;login: The USENIX Magazine*, Volume 41, Number 4, pp. 20–26, Winter, 2016.

J9. Ivo Jimenez, Carlos Maltzahn, Jay Lofstead, Adam Moody, Kathryn Mohror, Remzi Arpaci-Dusseau, Andrea Arpaci-Dusseau, "I Aver: Providing Declarative Experiment Specifications Facilitates the Evaluation of Computer Systems Research," *Tiny Transactions on Computer Science (TinyToCS)*, Volume 4, 2016.

J8. Sasha Ames, Maya B. Gokhale, and Carlos Maltzahn, "QMDS: a file system metadata management service supporting a graph data model-based query language," *International Journal of Parallel, Emergent and Distributed Systems*, Volume 27, Number 2, 2012.

J7. Carlos Maltzahn, Esteban Molina-Estolano, Amandeep Khurana, Alex J. Nelson, Scott A. Brandt, and Sage Weil, "Ceph as a Scalable Alternative to the Hadoop Distributed File System," *;login: The USENIX Magazine*, Volume 35, Number 4, pp. 38–49, August, 2010.

J6. Esteban Molina-Estolano, Carlos Maltzahn, John Bent, Scott A. Brandt, "Building a Parallel File System Simulator," *Journal of Physics: Conference Series*, Volume 180 (2009) 012050, August 2009.

J5. Anna Povzner, Tim Kaldewey, Scott A. Brandt, Richard Golding, Theodore M. Wong, Carlos Maltzahn, "Efficient Guaranteed Disk Request Scheduling with Fahrrad," *ACM SIGOPS Operating Systems Review*, Volume 42, Issue 4 (May, 2008), pp. 13—25, 2008.

J4. Carlos Maltzahn, Nikhil Bobb, Mark W. Storer, Damian Eads, Scott A. Brandt, and Ethan L. Miller, "Graffiti: A Framework for Testing Collaborative Distributed Metadata," *Distributed Data & Structures 7, Proceedings in Informatics* **21** (2007), pp. 97–111, 2007.

J3. Clarence E. Ellis and Carlos Maltzahn, "Collaboration with Spreadsheets," *Journal of the Brazilian Computer Society*, Special Edition on CSCW, **1**(1), pp. 15–23, 1994.

J2. Matthias Jarke, Carlos Maltzahn, and Thomas Rose, "Sharing Processes: Team Coordination in Design Repositories," *International Journal of Intelligent and Cooperative Information Systems (IJICIS)*, **1**(1), pp. 145–168, 1992.

J1. Thomas Rose, Matthias Jarke, Martin Gocek, Carlos Maltzahn, and Hans Nissen, "A Decision-Based Configuration Process Environment," *Software Engineering Journal*, **6**(5), pp. 332–346, September 1991.

Papers in Conference Proceedings

Acceptance rates provided where known.

Refereed Conference & Workshop Papers

C75. Alexandru Uta, Alexandru Custura, Dmitry Duplyakin, Ivo Jimenez, Jan Rellermeyer, Carlos Maltzahn, Robert Ricci, Alexandru Iosup, "Is Big Data Performance Reproducible in Modern Cloud Networks?" *17th USENIX Symposium on Networked Systems Design and Implementation (NSDI'20)*, Santa Clara, CA, February 25-27, 2020.

C74. Kathryn Dahlgren, Jeff LeFevre, Ashay Shirwadkar, Ken Iizawa, Aldrin Montana, Peter Alvaro, Carlos Maltzahn, "Towards Physical Design Managementin Storage Systems," *4th International Parallel Data Systems Workshop (PDSW 2019, co-located with SC'19)*, Denver, CO, November 18, 2019.

C73. Jianshen Liu, Philip Kufeldt, Carlos Maltzahn, "MBWU: Benefit Quantification for Data Access Function Offloading," *HPC I/O in the Data Center Workshop (HPC-IODC 2019)*, Frankfurt, Germany, June 20, 2019.

C72. Andrea David, Mariette Souppe, Ivo Jimenez, Katia Obraczka, Sam Mansfield, Kerry Veenstra, Carlos Maltzahn, "Reproducible Computer Network Experiments: A Case Study Using Popper," *2nd International Workshop on Practical Reproducible Evaluation of Computer Systems (P-RECS, co-located with HPDC'19)*, Phoenix, AZ, June 24, 2019.

C71. Ivo Jimenez, Carlos Maltzahn, "Spotting Black Swans With Ease: The Case for a Practical Reproducibility Platform," *1st Workshop on Reproducible, Customizable and Portable Workflows for HPC (ResCuE-HPC'18, co-located with SC'18)*, Dallas, TX, November 11, 2018

C70. Aleksander Maricq, Dmitry Duplyakin, Ivo Jimenez, Carlos Maltzahn, Ryan Stutsman, and Robert Ricci, "Taming performance variability," *13th USENIX Symposium on Operating Systems Design and Implementation (OSDI '18)*, Carlsbad, CA, October 8-10, 2018

C69. Michael A. Sevilla, Carlos Maltzahn, "Popper Pitfalls: Experiences Following a Reproducibility Convention," *1st International Workshop on Practical Reproducible Evaluation of Computer Systems (P-RECS, co-located with HPDC'18)*, Tempe, AZ, June 11, 2018.

C68. Michael A. Sevilla, Reza Nasirigerdeh, Carlos Maltzahn, Jeff LeFevre, Noah Watkins, Peter Alvaro, Margaret Lawson, Jay Lofstead, Jim Pivarski, "Tintenfisch: File System Namespace Schemas and Generators," *10th USENIX Workshop on Hot Topics in Storage and File Systems (HotStorage'18, co-located with USENIX ATC'18)*, Boston, MA, July 9-10, 2018.

C67. Ivo Jimenez, Noah Watkins, Michael Sevilla, Jay Lofstead, Carlos Maltzahn, "*quiho*: Automated Performance Regression Testing Using Inferred Resource Utilization Profiles," *9th ACM/SPEC International Conference on Performance Engineering (ICPE 2018)*, Berlin, Germany, April 9-13, 2018.

C66. Michael Sevilla, Carlos Maltzahn, Peter Alvaro, Reza Nasirigerdeh, Bradley Settlemyer, Danny Perez, David Rich and Galen Shipman, "Programmable Caches with a Data Management Language & Policy Engine," *18th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid 2018)*, Washington, DC, May 1-4, 2018.

C65. Michael Sevilla, Ivo Jimenez, Noah Watkins, Jeff LeFevre, Shel Finkelstein, Peter Alvaro, Patrick Donnelly and Carlos Maltzahn, "Cudele: An API and Framework for Programmable Consistency and Durability in a Global Namespace," *32nd IEEE International Parallel and Distributed Processing Symposium (IPDPS 2018)*, Vancouver, BC, Canada, May 21-25, 2018.

C64. Zhihao Jia, Sean Treichler, Galen Shipman, Michael Bauer, Noah Watkins, Carlos Maltzahn, Pat McCormick, Alex Aiken, "Integrating External Resources with a Task-Based Programming Model," *24th IEEE International Conference on High Performance Computing, Data, and Analytics (HiPC 2017)*, Jaipur, India, 18-21 December, 2017.

C63. Latchesar Ionkov, Carlos Maltzahn, and Michael Lang, "Optimized scatter/gather data operations for parallel storage," *2nd Joint International Workshop on Parallel Data Storage & Data Intensive Scalable Computing (PDSW-DISC'17, co-located with SC'17)*, Denver, CO, Nov 13 2017.

C62. Noah Watkins, Michael Sevilla, Ivo Jimenez, Kathryn Dahlgren, Peter Alvaro, Shel Finkelstein, Carlos Maltzahn, "DeclStore: Layering is for the Faint of Heart," *9th USENIX Workshop on Hot Topics in Storage and File Systems (HotStorage'17, co-located with USENIX ATC'17)*, Santa Clara, CA, July 10-11, 2017.

C61. Ivo Jimenez, Michael Sevilla, Noah Watkins, Carlos Maltzahn, Jay Lofstead, Kathryn Mohror, Andrea Arpaci-Dusseau and Remzi Arpaci-Dusseau, "The Popper Convention: Making Reproducible Systems Evaluation Practical," *2017 IEEE International Parallel and Distributed Processing Symposium Workshops (IPDPSW)*, 1561–70, 2017.

C60. Ivo Jimenez, Andrea Arpaci-Dusseau, Remzi Arpaci-Dusseau, Jay Lofstead, Carlos Maltzahn, Kathryn Mohror, Robert Ricci, "PopperCI: Automated Reproducibility Validation," *Workshop on Computer and Networking Experimental Research Using Testbeds (CNERT'17) in conjunction with IEEE INFOCOM 2017*, Atlanta, GA, May 1, 2017.

C59. Michael Sevilla, Noah Watkins, Ivo Jimenez, Peter Alvaro, Shel Finkelstein, Jeff LeFevre, Carlos Maltzahn, "Malacology: A Programmable Storage System," *EuroSys 2017*, Belgrade, Serbia, April 23-26, 2017.

C58. Nicholas Brummell, John Gustafson, Andrew Klofas, Carlos Maltzahn, Andrew Shewmaker, "Unum Arithmetic: Better Math with Clearer Tradeoffs," *The 1st International Workshop on Post-Moore's Era Supercomputing (PMES 2016), co-located with SC16*, Salt Lake City, UT, November 14, 2016.

C57. Jay Lofstead, Ivo Jimenez, Carlos Maltzahn, Quincey Koziol, John Bent, Eric Barton, "DAOS and Friends: A Proposal for an Exascale Storage System," *29th ACM and IEEE International Conference for High Performance Computing, Networking, Storage and Analysis (SC16)*, Salt Lake City, UT, November 13-18, 2016.

C56. Andrew G. Shewmaker, Carlos Maltzahn, Katia Obraczka, Scott Brandt, John Bent, "TCP Inigo: Ambidextrous Congestion Control," *25th International Conference on Computer Communications and Networks (ICCCN 2016)*, Waikoloa, HI, August 1-4, 2016.

C55. Ivo Jimenez, Carlos Maltzahn, Jay Lofstead, Adam Moody, Kathryn Mohror, Remzi Arpaci-Dusseau, Andrea Arpaci-Dusseau, "Characterizing and Reducing Cross-Platform Performance Variability Using OS-level Virtualization," *1st IEEE International Workshop on Variability in Parallel and Distributed Systems (VarSys'16)*, co-located with the 30th IEEE International Parallel and Distributed Processing Symposium (IPDPS 2016), Chicago, IL, May 23, 2016.

C54. Adam Manzanares, Noah Watkins, Cyril Guyot, Damien LeMoal, Carlos Maltzahn, Zvonimir Bandic, "ZEA, A Data Management Approach for SMR," *8th USENIX Workshop on Hot Topics in Storage and File Systems*, Denver, CO, June 20-21, 2016.

C53. Joshua Hacker, John Exby, N. Chartier, D. Gill, Ivo Jimenez, Carlos Maltzahn, and Gretchen Mullendore, "Collaborative Research and Education with Numerical Weather Prediction Enabled by Software Containers," *American Meteorological Society 32nd Conference on Environmental Processing Technologies*, New Orleans, LA, January 10-14, 2016.

C52. Ivo Jimenez, Carlos Maltzahn, Jay Lofstead, Kathryn Mohror, Adam Moody, Remzi Arpaci-Dusseau, Andrea Arpaci-Dusseau, "Tackling the Reproducibility Problem in Storage Systems Research with Declarative Experiment Specifications," *10th Parallel Data Storage Workshop at Supercomputing '15 (PDSW 2015)*, Austin, TX, November 16, 2015.

C51. Noah Watkins, Zhihao Jia, Galen Shipman, Carlos Maltzahn, Alex Aiken, Pat McCormick, "Automatic and Transparent I/O Optimization With Storage Integrated Application Runtime Support," *10th Parallel Data Storage Workshop at Supercomputing '15 (PDSW 2015)*, Austin, TX, November 16, 2015.

C50. Michael Sevilla, Noah Watkins, Carlos Maltzahn, Ike Nassi, Scott Brandt, Sage Weil, Greg Farnum, Sam Fineberg, "Mantle: A Programmable Metadata Load Balancer for the Ceph File System," *28th ACM and IEEE International Conference for High Performance Computing Networking, Storage, and Analysis (SC15)*, Austin, TX, November 2015.

C49. Ivo Jimenez, Carlos Maltzahn, Adam Moody, Kathryn Mohror, Jay Lofstead, Remzi Arpaci-Dusseau, Andrea Arpaci-Dusseau, "The Role of Container Technology in Reproducible Computer Systems Research," *First Workshop on Containers (WoC 2015)* (Workshop co-located with IEEE International Conference on Cloud Engineering - IC2E 2015), Tempe, AZ, March 9-13, 2015.

C48. Jay Lofstead, Jai Dayal, Ivo Jimenez, Carlos Maltzahn, "Efficient, Failure Resilient Transactions for Parallel and Distributed Computing," *The 2014 International Workshop on Data-Intensive Scalable Computing Systems (DISCS-2014)* (Workshop co-located with Supercomputing 2014), New Orleans, LA, November 16, 2014.

C47. Dimitrios Skourtis, Dimitris Achlioptas, Noah Watkins, Carlos Maltzahn, Scott Brandt, "Erasure Coding & Read/Write Separation in Flash Storage," *2nd Workshop on Interactions of NVM/Flash with Operating Systems and Workloads (INFLOW '14)* (Workshop co-located with OSDI 2014), Broomfield, CO, October 5, 2014.

C46. Jay Lofstead, Ivo Jimenez, Carlos Maltzahn, "Consistency and Fault Tolerance Considerations for the Next Iteration of the DOE Fast Forward Storage and IO Project," *2014 Workshop on Interfaces and Architectures for Scientific Data Storage (IASDS 2014)*, Minneapolis, MN, September 9-12, 2014.

C45. Adam Crume, Carlos Maltzahn, Lee Ward, Thomas Kroeger, Matthew Curry, "Automatic Generation of Behavioral Hard Disk Drive Access Time Models," *30th International Conference on Massive Storage Systems and Technology (MSST 2014)*, Santa Clara, CA, June 2-6, 2014.

C44. Dimitris Skourtis, Dimitris Achlioptas, Noah Watkins, Carlos Maltzahn, Scott Brandt, "Flash on Rails: Consistent Flash Performance through Redundancy," *USENIX Annual Technical Conference (ATC'14)*, Philadelphia, PA, June 19-20, 2014.

C43. Michael Sevilla, Ike Nassi, Kleoni Ioannidou, Scott Brandt, and Carlos Maltzahn, "SupMR: Circumventing Disk and Memory Bandwidth Bottlenecks for Scale-up MapReduce," *Workshop on Large-Scale Parallel Processing at IEEE International Parallel and Distributed Processing Symposium (LSPP)*, Phoenix, AZ, May 23, 2014.

C42. Carlos Maltzahn, Arnav Jhala, Michael Mateas, Jim Whitehead, "Gamification of Private Digital Data Archive Management," *International Workshop on Gamification for Information Retrieval at the European Conference on Information Retrieval (GamifIR'14)*, Amsterdam, Netherlands, April 13, 2014.

C41. Michael Sevilla, Ike Nassi, Kleoni Ioannidou, Scott Brandt and Carlos Maltzahn, "A Framework for an In-depth Comparison of Scale-up and Scale-out," *The 2013 International Workshop on Data-Intensive Scalable Computing Systems at Supercomputing '13 (DISCS-2013)*, Denver, CO, November 18, 2013.

C40. Jay Lofstead, Jai Dayal, Ivo Jimenez, and Carlos Maltzahn, "Efficient Transactions for Parallel Data Movement," *8th Parallel Data Storage Workshop at Supercomputing '13 (PDSW 2013)*, Denver, CO, November 18, 2013.

C39. Adam Crume, Carlos Maltzahn, Lee Ward, Thomas Kroeger, Matthew Curry, Ron Oldfield and Patrick Widener, "Fourier-Assisted Machine Learning of Hard Disk Drive Access Time Models," *8th Parallel Data Storage Workshop at Supercomputing 13 (PDSW 2013)*, Denver, CO, November 18, 2013.

C38. Dimitris Skourtis, Dimitris Achlioptas, Carlos Maltzahn, and Scott Brandt, "High Performance & Low Latency in Solid-State Drives Through Redundancy," INFLOW 2013 (in conjunctions with SOSP'13), Farmington, PA, November 3, 2013.

C37. Noah Watkins, Carlos Maltzahn, Scott Brandt, Ian Pye, and Adam Manzanares, "In-vivo storage system development," *BigDataCloud '13 (in conjunction with EuroPar 2013)*, Aachen, Germany, August 26, 2013.

C36. Joe Buck, Noah Watkins, Greg Levin, Adam Crume, Kleoni Ioannidou, Scott Brandt, Carlos Maltzahn, and Neoklis Polyzotis, and Aaron Torres, "SIDR: Structure-Aware Intelligent Data Routing in Hadoop," *26th ACM and IEEE International Conference for High Performance Computing Networking, Storage, and Analysis (SC13)*, Denver, CO, November 2013.

C35. Latchesar Ionkov, Mike Lang, Carlos Maltzahn, "DRepl: Optimizing Access to Application Data for Analysis and Visualization," *29th IEEE Symposium on Massive Storage Systems and Technologies - Research Track (MSST 2013)*, Long Beach, CA, May 6-10, 2013.

C34. Jun He, John Bent, Aaron Torres, Gary Grider, Garth Gibson, Carlos Maltzahn, Xian-He Sun, "I/O Acceleration with Pattern Detection," *22nd International ACM Symposium on High Performance Parallel and Distributed Computing (HPDC'13)*, New York City, NY, June 17-22, 2013.

C33. Adam Crume, Joe Buck, Carlos Maltzahn, Scott Brandt, "Compressing intermediate keys between mappers and reducers in SciHadoop," *7th Parallel Data Storage Workshop at Supercomputing 12 (PDSW 2012)*, Salt Lake City, UT, November 12, 2012.

C32. Noah Watkins, Carlos Maltzahn, Adam Manzanares, Scott Brandt, "Datamods: Programmable file system services," *7th Parallel Data Storage Workshop at Supercomputing 12 (PDSW 2012)*, Salt Lake City, UT, November 12, 2012.

C31. Jun He, John Bent, Aaron Torres, Gary Grider, Garth Gibson, Carlos Maltzahn, and X.-H. Sun, "Discovering structure in unstructured I/O," *7th Parallel Data Storage Workshop at Supercomputing 12 (PDSW 2012)*, Salt Lake City, UT, November 12, 2012.

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S31. Jeff LeFevre, Noah Watkins, Michael Sevilla, Carlos Maltzahn, "Skyhook: Programmable Storage for Databases," 2019 Linux Storage and Filesystems Conference (Vault'19, co-located with FAST'19), Boston, MA, February 25-26, 2019.

S30. Philip Kufeldt, Jianshen Liu, and Carlos Maltzahn, " MBWU (MibeeWu): Quantifying benefits of offloading data management to storage devices," Poster Session at 17th USENIX Conference on File and Storage Technologies (FAST'19), Boston, MA, February 25-28, 2019.

S29. Ivo Jimenez, Carlos Maltzahn, "Reproducible, Automated and Portable Computational and Data Science Experimentation Pipelines with Popper," AGU Fall Meeeting, Washington, DC, December 12-14, 2018.

S28. Carlos Maltzahn, "Should Storage Devices Stay Dumb or Become Smart?" Breakouts Session abstract at 10th USENIX Workshop on Hot Topics in Storage and File Systems (HotStorage'18, co-located with USENIX ATC'18), Boston, MA, July 9-10, 2018.

S27. Ivo Jimenez, Carlos Maltzahn, "Reproducible Computational and Data-Intensive Experimentation Pipelines with Popper," Lightning Talk and Poster Session at the 11th Extremely Large Databases Conference (XLDB), Stanford, CA, April 30 – May 2, 2018.

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S21. Ivo Jimenez, Carlos Maltzahn, Jai Dayal, Jay Lofstead, "Exploring trade-offs in transactional parallel data movement," in Poster Session at PDSW 2013 at SC13, (Denver, CO), November 17, 2013.

S20. Dimitris Skourtis, Scott A. Brandt, Carlos Maltzahn, "High Performance & Low Latency in Solid-State Drives Through Redundancy" In Work-in-Progress and Poster Session at the Conference on File and Storage Technology (FAST 2013), San Jose, CA, February 12-15, 2013.

S19. Adam Crume, Carlos Maltzahn, Jason Cope, Sam Lang, Rob Ross, Phil Carns, Chris Carothers, Ning Liu, Curtis Janssen, John Bent, Stephen Eidenbenz, Meghan Wingate, "FLAMBES: Evolving Fast Performance Models", Poster Session at Supercomputing 2011, Seattle, WA, November 12–18, 2011.

S18. Sasha Ames, Maya B. Gokhale, Carlos Maltzahn, "QMDS: A File System Metadata Service Supporting a Graph Data Model-Based Query Language", Poster Session at 5th Petascale Data Storage Workshop (PDSW 2010), co-located with Supercomputing 2010, New Orleans, LA, November 15, 2010.

S17. Milo Polte, Esteban Molina-Estolan, John Bent, Garth Gibson, Carlos Maltzahn, Maya B. Gokhale, Scott Brandt, "PLFS and HDFS: Enabling Parallel Filesystem Semantics In The Cloud", Poster Session at 5th Petascale Data Storage Workshop (PDSW 2010), co-located with Supercomputing 2010, New Orleans, LA, November 15, 2010.

S16. Rosie Wacha, Scott A. Brandt, John Bent, and Carlos Maltzahn, "RAID4S: Adding SSDs to RAID Arrays", Poster Session at EuroSys 2010, Paris, France, April 13-16, 2010.

S15. Esteban Molina-Estolano, Carlos Maltzahn, Ben Reed, and Scott A. Brandt, "Haceph: Scalable Metadata Management for Hadoop using Ceph", Poster Session at 7th USENIX Symposium on Networked Systems Design and Implementation (NSDI'10), San Jose, CA, April 28-30, 2010.

S14. Carlos Maltzahn, Michael Mateas, and Jim Whitehead. "Infogarden: A casual-game approach to digital archive management", Work-in-Progress and Poster Session at the Conference on File and Storage Technology (FAST 2010), San Jose, CA, February 24-27 2010.

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S10. Varun Bhagwan, Carlos Maltzahn, "JabberWocky: Crowd-Sourcing Metadata for Files", Work-In-Progress Session at 2009 IEEE International Conference on Services Computing (SCC 2009), Bangalore, India, September 21–25, 2009.

S9. Esteban Molina-Estolano, Carlos Maltzahn, Scott Brandt, and John Bent, "Comparing the Performance of Different Parallel Filesystem Placement Strategies," Work-In-Progress Session of the Conference on File and Storage Technology (FAST 2009), San Francisco, CA, February 24—27, 2009.

S8. Carlos Maltzahn, "How Private are Home Directories?", Work-in-Progress Session of the USENIX Conference on File and Storage Technology (FAST 2008), San Jose, CA, February 26—29, 2008.

S7. Anna Povzner, Scott A. Brandt, Richard Golding, Theodore Wong, Carlos Maltzahn, "Virtualizing Disk Performance with Fahrrad," Work-in-Progress Session of the USENIX Conference on File and Storage Technology (FAST 2008), San Jose, CA, February 26—29, 2008.

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S5. Ian Pye, Scott Brandt, and Carlos Maltzahn, "Ringer: A Global-Scale Lightweight P2P File Service," Work-in-Progress Session of the USENIX Conference on File and Storage Technology (FAST 2008), San Jose, CA, February 26—29, 2008.

S4. Esteban Molina-Estolano, Carlos Maltzahn, Sage Weil, and Scott Brandt, "Dynamic Load Balancing in Ceph," Work-in-Progress Session of the USENIX Conference on File and Storage Technology (FAST 2008), San Jose, CA, February 26—29, 2008.

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S1. Sage Weil, Scott A. Brandt, and Carlos Maltzahn, "Scaling Linux Storage to Petabytes," *Linux Storage and Filesystem Workshop (LSF07)*, held in conjunction with the *Conference on File and Storage Technology (FAST '07)*, San Jose, CA, February 12–13, 2007.

Patents, Inventions, Copyrights

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Other Publications

Technical Reports

T38. George Amvrosiadis and others, "Storage Research Vision 2025: Report on NSF Visioning Workshop held May 30–June 1, 2018," National Science Foundation, 2018.

T37. Reza NasiriGerdeh, Carlos Maltzahn, Frank Wurthwein, Brian Bockelman, Matevz Tadel, Michael A. Sevilla, "Toward Efficient Data Prefetching Algorithms for Scientific Domains," Technical Report UCSC-SOE-18-11, May 2018

T36. Reza NasiriGerdeh, Jim Pivarski, Michael A. Sevilla, Carlos Maltzahn, "RootUtils: a Library to Better Understand ROOT Files," Technical Report UCSC-SOE-18-10, May 2018

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T32. Michael A. Sevilla, Noah Watkins, Ivo Jimenez, Peter Alvaro, Shel Finkelstein, Jeff LeFevre, Carlos Maltzahn, "Malacology: A Programmable Storage System," Technical Report UCSC-SOE-17-04, March 2017

T31. Noah Watkins, Michael Sevilla, Ivo Jimenez, Neha Ojha, Peter Alvaro, Carlos Maltzahn, "Brados: Declarative, Programmable Object Storage," Technical Report UCSC-SOE-16-12, April 2016

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T25. Ivo Jimenez, Carlos Maltzahn, Jay Lofstead, Adam Moody, Kathryn Mohror, Remzi Arpaci-Dusseau, Andrea Arpaci-Dusseau, "Tackling The Reproducibility Problem In Systems Research With Declarative Experiment Specifications," Technical Report UCSC-SOE-15-07, May 2015

T24. Adam Crume, Carlos Maltzahn, "Latent Frequency Synthesis For Behavioral Hard Disk Drive Access Time Models," Technical Report UCSC-SOE-15-06, April 2015

T23. Andrew G. Shewmaker, Carlos Maltzahn, Katia Obraczka, Scott Brandt, "TCP Inigo: Fighting Congestion With Both Hands," Technical Report UCSC-SOE-14-14, November 2014

T22. Ivo Jimenez, Carlos Maltzahn, Adam Moody, Kathryn Mohror, "Redo: Reproducibility At Scale," Technical Report UCSC-SOE-14-12, October 2014

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T19. Adam Crume, Carlos Maltzahn, Lee Ward, Thomas Kroeger, Matthew Curry, "Automatic Generation Of Behavioral Hard Disk Drive Access Time Models" Technical Report UCSC-SOE-14-02, March 2014

Adam Crume, Carlos Maltzahn, Lee Ward, Thomas Kroeger, Matthew Curry, Ron Oldfield, Patrick Widener, "Fourier-Assisted Machine Learning Of Hard Disk Drive Access Time Models" Technical Report UCSC-SOE-13-12, October 2013

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T15. Adam Crume, Joe Buck, Noah Watkins, Carlos Maltzahn, Scott A. Brandt, Neoklis Polyzotis, "SciHadoop Semantic Compression," Technical Report UCSC-SOE-12-13, August 2012

T14. Joe Buck, Noah Watkins, Greg Levin, Kleoni Ioannidou, Scott A. Brandt, Carlos Maltzahn, Neoklis Polyzotis, "SIDR: Efficient Structure-Aware Intelligent Data Routing in SciHadoop," Technical Report UCSC-SOE-12-08, July 2012

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T12. Sasha Ames, Maya B. Gokhale, Carlos Maltzahn, "QMDS: A File System Metadata Management Service Supporting a Graph Data Model-based Query Language," Technical Report UCSC-SOE-11-12, April 2011

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T10. Joe B. Buck, Noah Watkins, Jeff LeFevre, Kleoni Ioannidou, Carlos Maltzahn, Neoklis Polyzotis, Scott Brandt, "SciHadoop: Array-based Query Processing in Hadoop," Technical Report UCSC-SOE-11-04, January 2011.

T9. Sasha Ames, Maya B. Gokhale, Carlos Maltzahn, "Design and Implementation of a Metadata-Rich File System," Technical Report UCSC-SOE-10-07, January 2010.

T8. Sasha Ames, Maya B. Gokhale, Carlos Maltzahn, "Quasar: A Scalable Naming Language for Very Large File Collections," Technical Report UCSC-SOE-09-32, November 2009.

T7. Sasha Ames, Carlos Maltzahn, Ethan L. Miller, "Quasar: A Scalable Naming Language for Very Large File Collections," Technical Report UCSC-SSRC-08-04, October 2008.

T6. Sasha Ames, Carlos Maltzahn, Ethan L. Miller, "QUASAR: Interaction with File Systems Using a Query and Naming Language," Technical Report UCSC-SSRC-08-03, September 2008.

T5. Sage A. Weil, Carlos Maltzahn, Scott A. Brandt, "RADOS: A Reliable Autonomic Distributed Object Store," Technical Report SSRC-07-01, Storage Systems Research Center, University of California, Santa Cruz, January 2007.

T4. Sage A. Weil, Scott A. Brandt, Ethan L. Miller, Darrell D. E. Long, Carlos Maltzahn, "Ceph: A Scalable Object-bsed Storage System," Technical Report SSRC-06-02, Storage Systems Research Center, University of California, Santa Cruz, January 2006.

T3. Sage A. Weil, Scott A. Brandt, Ethan L. Miller, Carlos Maltzahn, "CRUSH: Controlled, Scalable, Decentralized Placement of Replicated Data," Technical Report SSRC-06-01, Storage Systems Research Center, University of California, Santa Cruz, January 2006.

T2. Carlos Maltzahn, Kathy J.Richardson, Dirk Grunwald, and James Martin, "A Feasibility Study of Bandwidth Smoothing on the World-Wide Web Using Machine Learning," Technical Report CU-CS-879-99, University of Colorado at Boulder, 1999.

T1. Carlos Maltzahn and David Vollmar, "ToolBox: A Living Directory for Unix Tools Owned by the Community," Technical Report CU-CS-747-94, University of Colorado at Boulder, 1994.

Miscellanea

M2. Ivo Jimenez, Carlos Maltzahn, "Creating Reproducible Experimentation Workflows with Popper: A Hands-on, Bring Your Own Code Tutorial," 15th eScience 2019 International Conference, San Diego, CA, September 25, 2019.

M1. Ivo Jimenez, Carlos Maltzahn, Jay Lofstead, "Tutorial: Creating Repeatable, Reusable Experimentation Pipelines With Popper (Hands-on Tutorial)," PPoPP 2019 Workshop and Tutorials, Washington, D.C., February 16, 2019.

Software Distributions

SW4. `Infogarden`: A research prototype for personal digital curation as a casual game. 2009-2010.
Infogarden uses the metaphor of gardening: documents are represented either as weeds or as plants of various sizes and shapes depending on their status in the curation process. The player converts weeds into plants and fruit by shooting keywords at them.
See http://users.soe.ucsc.edu/~carlosm/Infogarden.

SW3. `Ceph`: An open-source petascale distributed file system with seamless scaling, strong reliability, fast recover, and an adaptive distributed metadata service. See http://ceph.newdream.net or Google "Ceph File System". 2005-2010.

(a) Recently included in the official Linux kernel distribution.
See http://www.ucsc.edu/news_events/text.asp?pid=3807.

(b) Used as the basis for Symantec's S4 storage system.

(c) CRUSH component used by Yahoo! for web hashing

(d) CRUSH component implemented as the basis for LSI's Next Generation Data Protection Layer (NGDPL).

SW2. `Chautauqua`: An experimental client/server workflow system. 1995-1997.
The design focusses on dynamic change and exception handling. It is entirely written in Python and uses `Paos` as client/server infrastructure.

SW1. `Paos`: The Python active object server is an active multi-user object server. 1995-1997.
Paos includes a simple query language and a client module that supports sophisticated object caching and lazy retrieval of instances.

PROFESSIONAL ACTIVITIES

Public Lecture or Forum Participation

Invited Presentations

I45. Panel on "Enabling Data Services for HPC (BoF at SC19)," convened by Jerome Soumagne, Phil Carns, Mohamad Chaarawi, Kevin Huck, Manish Parashar, Robert B. Ross. Other participants: André Brinkmann, Stéphane Ethier, Paolo Faraboschi, Glenn Lockwood, Denver, CO, November 19, 2019.

I44. "Education, research, and technology transfer in open source software: new possibilities for universities," École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland, October 24, 2019.

I43. "Education, research, and technology transfer in open source software: new possibilities for universities," Friedrich-Alexander Universität Erlangen-Nürnberg, Erlangen, Germany, October 21, 2019.

I42. "Center for Research in Open Source Software," Lightening Talk at the Google Summer of Code Mentor Summit, Munich, Germany, October 19, 2019.

I41. "Update on the Center for Research in Open Source Software," Los Alamos National Lab, Los Alamos, NM, August 15, 2019.

I40. "How to Leverage Research Universities," Linux Foundation Open Source Leadership Summit (OSLS 2019), Half Moon Bay, CA, March 12-14, 2019.

I39. "Programmable Storage Systems: For I/O that doesn't fit under the rug," Amazon AWS, East Palo Alto, CA, January 25, 2019.

I38. "Programmable Storage Systems: For I/O that doesn't fit under the rug," VMware, Palo Alto, CA, December 11, 2018.

I37. Ivo Jimenez, Carlos Maltzahn, "IN53A-04: Reproducible, Automated and Portable Computational and Data Science Experimentation Pipelines with Popper (Invited)," in "IN53A: Enabling Transparency and Reproducibility in Geoscience Through Practical Provenance and Cloud-Based Workflow I," convened by Matthew B. Jones (chair), Joshua Hacker (chair), Kevin Tyle, and Annie Briant Burgess, American Geophysical Union Fall Meeting, Washington, D.C., December 10-14, 2018.

I36. "The Big Weather Web: Crystallization Points for Numerical Weather Prediction," NSF S2I2 PI Meeting, Washington, D.C., April 30 - May 1, 2018.

I35. "Programmable Storage Systems: For I/O that doesn't fit under the rug," University of Wisconsin, Madison, April 23, 2018.

I34. "Programmable Storage Systems," Los Alamos National Laboratory, August 10, 2017.

I33. "Programmable Storage Systems," IBM Almaden, July 20, 2017.

I32. "Ceph, Programmable Storage, and Data Fabrics," Fermilab, Winfield Township, IL, June 9, 2017.

I31. "The Big Weather Web", 2017 Modeling Research in the Cloud Workshop, Boulder, CO, June 1, 2017.

I30. "The Center for Research in Open Source Software," Oak Ridge National Laboratory, Oak Ridge, May 21, 2017.

I29. "POPPER: a protocol for reproducible science" (together with Ivo Jimenez), 9th LHCb Computing Workshop at CERN, Zurich, Switzerland, May 2, 2017.

I28. "The Popper Convention: Practical Reproducible Evaluation of Systems," 2nd NSF Software Infrastructure for Sustained Innovation (S2I2) in High-Energy Physics and Computer Science Workshop, Princeton University, Princeton, NJ, May 2 , 2017.

I27. "The Center for Research in Open-Source Software," 2nd NSF Software Infrastructure for Sustained Innovation (S2I2) in High-Energy Physics and Computer Science Workshop, Princeton University, Princeton, NJ, May 1, 2017.

I26. "On Making it More Convenient to Stand on the Shoulders of Giants – by Managing Scientific Experiments like Software," Sandia National Laboratories, Albuquerque, NM, July, 2016.

I25. "On Making it More Convenient to Stand on the Shoulders of Giants – by Managing Scientific Experiments like Software," Los Alamos National Laboratory, Los Alamos, NM, July, 2016.

I24. "Big Weather Web: A common and sustainable big data infrastructure in support of weather prediction research and education in universities," AGU Town Hall at AGU Fall Meeting, San Francisco, CA, December, 2015.

I23. "Taming the Wild West of HPC Resource Management," Oak Ridge National Laboratory, October, 2015.

I22. "Big Weather Web: A common and sustainable big data infrastructure in support of weather prediction research and education in universities," Unidata/UCAR Triennial Workshop, Theme: Data-Driven Geoscience: Applications, Opportunities, Trends, and Challenges, Boulder, CO, June 22-25, 2015.

I21. "Programmable File Systems and In-Vivo Storage Systems Evolution," UCSC/NASA Ames Research Review Day, Santa Clara, CA, February 2014.

I20. Panel on "Big Data's Next Big Move" moderated by Andrew Hospodor (UCSC). Other participants: Joel Primack (UCSC), Lise Getoor (UCSC), Cesar Andres Lopez (Sensata Inc.), Piyush Mehrotra (NASA Ames), Tricia Salinero (Woodside Capital Partners), sponsored by the Silicon Valley Space Business Roundtable (SVSBR) & UCSC, Santa Clara, CA, January 2014.

I19. "Programmable Storage Systems," Information Science and Technology Seminar Speaker Series, Los Alamos National Laboratory (LANL), Los Alamos, NM, August 2013.

I18. "Programmable Storage Systems," Scientific Data Group, Oak Ridge National Laboratory (ORNL), Oak Ridge, TN, August 2013.

I17. "Programmable file system services and in-vivo storage system development," National Center for Atmospheric Research (NCAR), Boulder, CO, July 2013.

I16. Panel on "How big is your 'Big Data', and how can HPDC help?" moderated by Tevfik Kosar (University of Buffalo, SUNY). Other participants: Gagan Agrawal (Ohio State University), Peter Dinda (Northwestern University), Dan Katz (University of Chicago and Argonne National Laboratory), and Douglas Thain (University of Notre Dame), New York City, NY, June 2013.

I15. Panel on "Rethinking Clusters and Filesystems for Data Intensive Computing" other participants: Dries Kimpe (Argonne National Lab), Alex Szalay (Johns Hopkins University), Paolo Costa (Imperial College, London, UK), Douglas Thain (Moderator, University of Notre Dame), 5th International Workshop on Data Intensive Distributed Computing (DIDC 2012, in conjunction with HPDC 2012), Delft, Netherlands, June 2012.

I14. "Scientific data management on exa-scale systems" HPDC Trends Workshop, Amsterdam, Netherlands, March 2012.

I13. Panel on "Storage in HPC: Are Parallel File Systems the (Only) Future?" other participants: Peter Braam (Xyratex), Andre Brinkmann (University of Paderborn), Shinji Sumimoto (Fujitsu, Japan), Brent Welch (Panasas), Cluster 2011, Austin, TX, September 2011.

I12. "Next Gen IO: Scalable Scientific Data Management," Panel on Next Gen IO, other participants: Aloc Choudhary (Northwestern University), Dries Kimpe (Argonne National Lab), Raju Rangaswaami (Florida Internation University), High-End Computing–I/O Working Group HEC FSIO Workshop, Arlington, VA, August 2011.

I11. "Managing the Performance of Large, Distributed Storage Systems," High-End Computing–I/O Working Group HEC FSIO Workshop, Arlington, VA, August 2009.

I10. "The Ceph Distributed Object-Based Storage System," *Workshop on Enabling Data-Intensive Computing: from Systems to Applications*, Pittsburgh, PA, July 30-31, 2009.

I9. "Queriable File Systems for Metadata Management," Poster at the 3rd Petascale Data Storage Workshop at Supercomputing 2008, Austin, TX, November 17, 2008.

I8. "Methods for Creating Metadata for Sharable Files", *11th Workshop on Frontiers in Distributed Information Systems (FDIS: 2008)*, Woods Hole, MA, June 30 - July 2, 2008.

I7. "Methods for Creating Metadata for Sharable Files", IBM Watson Research Center, Hawthorne, NY, 2008.

I6. "End-to-end quality of service for large distributed storage", University of Colorado at Boulder, 2007.

I5. "The Petascale Data Storage Institute" The Scientific Data Management (SDM) Center All-Hands Meeting, Lawrence Berkeley National Laboratory (LBNL), 2006.

I4. "Ceph: A Peta-Scale File System," University of Colorado at Boulder, 2006.

I3. Panel member, "Federated Computing Clusters: A new model for distributed computing," CITRIS Corporate Sponsor Day, NASA Ames, 2005.

I2. "Research Thrusts of the Storage Systems Research Center," University of Colorado at Boulder, 2005.

I1. "Persistente Objekte und Workflow-Managment mit Paos," Linux Magazin 7/1996, pp. 56–59.

Conference and Meetings

2019 **Invited Participant**: "Open source beyond 2020 – Powering a digital Europe," a workshop convened by DG CONNECT – Communications Networks, Content and Technology - Cloud and software, European Commission, Brussels, Belgium, November 14-15, 2019.

2019 **Session Chair**: "Storage Systems" at the 4th Annual CROSS Research Symposium, Santa Cruz, CA, October 2, 2019.

2019 **Steering, Program, and Organization**: 4th Annual CROSS Research Symposium, Santa Cruz, CA, October 2-3, 2019.

2019 **Program Committee (Technical Papers)**: The International Conference for High Performance Computing, Networking, Storage, and Analysis (SC20), Atlanta, GA, November 15-20, 2020.

2019 **Program Committee**: 2020 USENIX Annual Technical Conference (USENIX ATC '20), Boston, MA, July 15-17, 2020.

2019 **Reproducibility Co-Chairs** (together with Ivo Jimenez): 4th International Parallel Data Systems Workshop (PDSW'19).

2019 **Steering Committee**: 4th International Parallel Data Systems Workshop (PDSW'19).

2019 **Organization, Co-Chair** (together with Ivo Jimenez, Jay Lofstead): 2nd International Workshop on Practical Reproducible Evaluation of Computer Systems (P-RECS'19, co-located with ACM HPDC 2019), Phoenix, AZ, June 24, 2019.

2019 **Program Committee**: USENIX Annual Technical Conference (ATC'19), Renton, WA, July 10-12, 2019.

2018 **Program Committee**: 26th ACM Symposium on Operating Systems Principles (SOSP 2019), Huntsville, Ontario, Canada, October 27-30, 2019.

2018 **Technical Program Committee**: 28th International ACM Symposium on High-Performance Parallel and Distributed Computing (HPDC'19), Phoenix, AZ, June 22-29, 2019.

2018 **Session Co-Chair** (together with Ivo Jimenez): "Reproducibility Forum," 3rd Joint International Workshop on Parallel Data Storage & Data Intensive Scalable Computing Systems (PDSW-DISCS 2018), co-located with SC18, Dallas, TX, November 12, 2018.

2018 **Reproducibility Co-Chairs** (together with Ivo Jimenez): 3rd Joint International Workshop on Parallel Data Storage & Data Intensive Scalable Computing Systems (PDSW-DISCS'18).

2018 **Steering Committee**: 3rd Joint International Workshop on Parallel Data Storage & Data Intensive Scalable Computing Systems (PDSW-DISCS'18).

2018 **Invited Participant**: "IRIS-HEP Kickoff Workshop," Chicago, IL, October 31 - November 2, 2018.

2018 **Invited Participant**: "IRIS-HEP DOMA Planning," Chicago, IL, October 17-18, 2018.

2018 **Invited Participant**: "NSF CSR 2018 PI Meeting," Bellevue, WA, October 24, 2018.

2018 **Session Chair**: "Storage Systems" at the 3rd Annual CROSS Research Symposium, Santa Cruz, CA, October 4, 2018.

2018 **Steering, Program, and Organization**: 3rd Annual CROSS Research Symposium, Santa Cruz, CA, October 3-4, 2018.

2018 **Invited Participant**: "The Storage Systems and Input/Output (SSIO) Workshop," (by invitation only) sponsored by the U.S. Department of Energy Office of Advanced Scientific Computing Research, Gaithersburg, MD, September 19-20, 2018.

2018 **Organization, Chair**: "Big Weather Web PI Meeting," Boulder, CO, August 9, 2018.

2018 **Invited Participant**: "Geoscience Digital Data Resource and Repository Service (GeoDaRRS) Workshop," Boulder, CO, August 7-9, 2018.

2018 **Breakouts Session Lead**: "Should Storage Devices Stay Dumb or Become Smart?" 10th USENIX Workshop on Hot Topics in Storage and File Systems (HotStorage'18, co-located with USENIX ATC'18), Boston, MA, July 9-10, 2018.

2018 **General Chair**: 31st International Conference on Scientific & Statistical Database Management (SSDBM '19), Santa Cruz, CA, July 23-25, 2019.

2018 **Session Chair**: "Refereed Papers Track II: Key/Value Storage," USENIX Annual Technial Conference (USENIX ATC '18), Boston, MA, July 11-23, 2018.

2018 **Session Chair**: "Paper Session 2," 1st International Workshop on Practical Reproducible Evaluation of Computer Systems (P-RECS'18), co-located with ACM HPDC 2018, Tempe, AZ, Jun 11, 2018.

2018 **Invited Participant**: "Workshop on Data Storage Research 2025 - An NSF-Sponsored Community Visioning Workshop" (by invitation only), IBM Almaden, San Jose, CA, May 31 - June 1, 2018.

2018 **Invited Participant**: "First Software Sustainability Institute Workshop," Conceptualization of an NSF Scientific Software Innovation Institute (S2I2) for Research Software Sustainability in the United States, University of California at Berkeley, Berkeley, CA, April 2018

2018 **Program Committee (Technical Papers)**: The International Conference for High Performance Computing, Networking, Storage, and Analysis (SC18), Dallas, TX, November 12-15, 2018.

2018 **Organization, Co-Chair** (together with Ivo Jimenez): BoF at 16th USENIX Conference on File and Storage Technologies, Oakland, CA, February 14, 2018.

2018 **Invited Participant**: "The Extreme Heterogeneity Workshop," (by invitation only) sponsored by the U.S. Department of Energy Office of Advanced Scientific Computing Research, Januray 23-25, 2018.

2018 **Organization, Co-Chair** (together with Ivo Jimenez and Jay Lofstead): 1st International Workshop on Practical Reproducible Evaluation of Computer Systems (P-RECS'18), co-located with ACM HPDC 2018, Tempe, AZ, Jun 11, 2018.

2018 **Organization** (together with Ivo Jimenez and Kevin Tyle): 98th Annual Meeting of the American Meteorological Society (AMS): Short course on "Reproducible Atmospheric Science Workflows Using Open Source Tools: An Introduction to the Popper Experimentation Protocol," Austin, TX, Jan 7, 2018.

2017 **Program Committee**: USENIX Annual Technial Conference (USENIX ATC '18), July 11-23, 2018, Boston, MA.

2017 **Program Co-Chair** (together Peter Elmer and Ian Fisk): Workshop on Data Organization, Management and Access (DOMA) in Genomics, High Energy Physics and Astronomy, Nov 16-17, 2017, New York City, NY.

2017 **Session Chair**: "Scalability of Storage Systems" at 2nd Joint International Workshop on Parallel Data Storage & Data Intensive Scalable Computing Systems (PDSW-DISCS'17).

2017 **Program Committee**: 2nd Joint International Workshop on Parallel Data Storage & Data Intensive Scalable Computing Systems (PDSW-DISCS'17).

2017 **Steering Committee**: 2nd Joint International Workshop on Parallel Data Storage & Data Intensive Scalable Computing Systems (PDSW-DISCS'17).

2017 **Session Chair**: "Programmable Storage" at the 2nd Annual CROSS Research Symposium.

2017 **Steering, Program, and Organization**: 2nd Annual CROSS Research Symposium.

2017 **Invited Participant**: "2017 Workshop on Reproducibility Taxonomies for Computing and Computational Science" together with Lorena Barba (GWU), Ronald Boisvert (NIST), Bruce Childers (U Pittsburgh), Almadena Chtchelkanova (NSF), Juliana Freire (NYU), Mike Heroux (Sandia), Manish Parashar (Rutgers), Abani Patra (DOE), Wilf Pinfold (Modelado), Jeff Spies (COS), Victoria Stodden (UIUC), Michela Taufer (U Delaware) at the National Science Foundation Headquarters, Arlington, VA.

2017 **Session Chair**: "Long Papers Session: Best Papers" at 29th International Conference on Scientific and Statistical Database Management (SSDBM 2017).

2017 **Session Chair**: "Flash II" at 33rd International Conference on Mass Storage systems and Technologies (MSST 2017).

2017 **Session Chair**: "Software/Data/Workflow Preservation & Reproducibility" at 2nd NSF Software Infrastructure for Sustained Innovation (S2I2) in High-Energy Physics and Computer Science Workshop (2nd S2I2 HEP/CS).

2017 **Program Committee**: 29th International Conference on Scientific and Statistical Database Management (SSDBM 2017).

2017 **Program Committee**: 32nd International Conference on Massive Storage Systems and Technology (MSST 2017).

2017 **Invited Participant**: "HEP Software Foundation Workshop," Conceptualization of an NSF Scientific Software Innovation Institute (S2I2) for High Energy Physics, University of California at San Diego / San Diego Supercomputer Center, San Diego, CA, January 2017

2016 **Session Chair**: "Data Insights" at 1st Joint International Workshop on Parallel Data Storage & Data Intensive Scalable Computing Systems (PDSW-DISCS'16).

2016 **Program Co-Chair** (together with Jishen Zhao): Workshop for Programmability and Architecture of Storage Systems at the 1st Annual CROSS Research Symposium.

2016 **Steering, Program, and Organization**: 1st Annual CROSS Research Symposium.

2016 **Program Committee**: 1st Joint International Workshop on Parallel Data Storage & Data Intensive Scalable Computing Systems (PDSW-DISCS'16).

2016 **Steering Committee**: 1st Joint International Workshop on Parallel Data Storage & Data Intensive Scalable Computing Systems (PDSW-DISCS'16).

2016 **Technical Program Committee**: 25th International ACM Symposium on High-Performance Parallel and Distributed Computing (HPDC'16).

2016 **Program Committee**: IEEE Cluster 2016.

2015 **Organization**: American Geophysical Union Town Hall on "Big Weather Web: Big Data Solutions in Support of Weather Prediction for University Research and Education," with Mohan K. Ramamurthy (Unidata), Joshua Hacker (NCAR), Kevin Tyle (SUNY Albany), Russ S. Schumacher (CSU), Gretchen Mullendore (UND), AGU Fall Meeting, San Francisco, CA, December 14-18, 2015.

2015 **Program Co-Chair** (together with Vasily Tarasov): 32nd International Conference on Massive Storage Systems and Technology (MSST 2016).

2015 **Program Committee**: 10th Parallel Data Storage Workshop in conjunction with Supercomputing 2015 (PDSW'15).

2015 **Steering Committee**: 10th Parallel Data Storage Workshop in conjunction with Supercomputing 2015 (PDSW'15).

2015 **Steering, Program, and Organization**: 7th SRL/ISSDM Annual Research Symposium.

2015 **Program Committee**: CCGrid 2015.

2015 **Technical Program Committee**: 24th International ACM Symposium on High-Performance Parallel and Distributed Computing (HPDC'15).

2015 **Program Committee**: IEEE Cluster 2015.

2014 **Session Chair** for "HPC I/O": 9th Parallel Data Storage Workshop in conjunction with Supercomputing 2014 (PDSW'14).

2014 **Steering, Program, and Organization**: 6th SRL/ISSDM Annual Research Symposium.

2014 **Program and Organization**: BoF at SC'14 "Programmable Storage Systems."

2014 **Session Chair** for "NVM Compression/Lifetime": 2nd Workshop on Interactions of NVM/Flash with Operating Systems and Workloads (INFLOW '14) (Workshop to be co-located with OSDI 2014)

2014 **Program Committee**: 9th Parallel Data Storage Workshop in conjunction with Supercomputing 2014 (PDSW'14).

2014 **Steering Committee**: 9th Parallel Data Storage Workshop in conjunction with Supercomputing 2014 (PDSW'14).

2014 **Program Committee**: 3rd International Workshop on Data-Intensive Scalable Computing Systems in conjunction with Supercomputing 2014 (DISCS'14).

2014 **Program Committee**: 2nd Workshop on Interactions of NVM/Flash with Operating Systems and Workloads (INFLOW '14) (Workshop to be co-located with OSDI 2014)

2014 **Program Committee**: CCGrid 2014.

2014 **Steering, Program, and Organization**: 1st Programmable File Systems Workshop (PFSW'14) in conjunction with HPDC'14. With Patrick McCormick (LANL). Vancouver, BC, Canada, June 2014.

2013 **Session Chair** for "In-Situ Data Analytics and Reduction": 26th ACM and IEEE International Conference for High Performance Computing Networking, Storage, and Analysis (SC13).

2013 **Session Chair** for "Playing with a Full Deck": 8th Parallel Data Storage Workshop in conjunction with Supercomputing 2013 (PDSW'13).

2013 **Panel Moderator** for "Extremely Large Database Challenges in the Oil & Gas Industry": 7th Extremely Large Database Workshop (7th XLDB Workshop).

2013 **Session Chair** for "Technical Avenues & Requirements": Workshop on overcoming barriers to distributed production, storage, and analysis of multi-model ensemble forecasts in support of weather prediction research and education in universities (Big Weather 2014). With Josh Hacker (NCAR), Russ Schumacher (CSU), and Gretchen Mullendore (UND), Sponsored by the National Science Foundation, Boulder, CO, January 2014.

2013 **Organization**: Workshop on overcoming barriers to distributed production, storage, and analysis of multi-model ensemble forecasts in support of weather prediction research and education in universities (Big Weather 2014). With Josh Hacker (NCAR), Russ Schumacher (CSU), and Gretchen Mullendore (UND), Sponsored by the National Science Foundation, Boulder, CO, January 2014.

2013 **Program Committee**: 5th Workshop on Interfaces and Architectures for Scientific Data Storage in conjunction with Cluster 2013 (IASDS 2013).

2013 **Steering, Program, and Organization** (together with Scott A. Brandt): 5th SRL/ISSDM Annual Research Symposium.

2013 **Program Committee**: 2nd International Workshop on Data-Intensive Scalable Computing Systems in conjunction with Supercomputing 2013 (DISCS'13).

2013 **Program Committee**: 8th Parallel Data Storage Workshop in conjunction with Supercomputing 2013 (PDSW'13).

2013 **Program Committee (New Thinking Track)**: SNIA 11th Annual Storage Developer Conference (2013 SDC).

2013 **Steering Committee**: 8th Parallel Data Storage Workshop in conjunction with Supercomputing 2013 (PDSW'13).

2013 **Program Committee (Technical Papers)**: 26th ACM and IEEE International Conference for High Performance Computing Networking, Storage, and Analysis (SC13).

2013 **Program Committee (Posters)**: 26th ACM and IEEE International Conference for High Performance Computing Networking, Storage, and Analysis (SC13).

2012-2013 **Program Committee**: 22nd International ACM Symposium on High-Performance Parallel and Distributed Computing (HPDC'13).

2012 **Program Committee**: 7th Parallel Data Storage Workshop in conjunction with Supercomputing 2012 (PDSW'12).

2012 **Program Committee**: 1st International Workshop on Data-Intensive Scalable Computing Systems in conjunction with Supercomputing 2012 (DISCS'12).

2012 **Steering, Program, and Organization** (together with Scott A. Brandt and Ike Nassi): 4th SRL/ISSDM Annual Research Symposium.

2012 **Steering Committee**: 7th Parallel Data Storage Workshop in conjunction with Supercomputing 2012 (PDSW'12).

2012 **Session Chair** for "Session 1": 5th International Workshop on Data Intensive Distributed Computing in conjunction with HPDC 2012 (DIDC 2012).

2012 **Program Committee**: 25th ACM and IEEE International Conference for High Performance Computing Networking, Storage, and Analysis (SC12).

2012 **Program Committee**: Workshop on Interfaces and Abstractions for Scientific Data Storage in conjunction with Cluster 2012 (IASDS12).

2011-2012 **General Program Co-Chair** (with Xiao Qin, Auburn University): 7th IEEE International Conference on Networking, Architecture, and Storage (NAS 2012);

2011 **Session Chair** for "Coordinated I/O": 24th ACM and IEEE International Conference for High Performance Computing Networking, Storage, and Analysis (SC11);

2011 **Session Chair** for Exhibitor Forum "Storage I": 24th ACM and IEEE International Conference for High Performance Computing Networking, Storage, and Analysis (SC11);

2011 **Program Committee**: 24th ACM and IEEE International Conference for High Performance Computing Networking, Storage, and Analysis (SC11);

2011 **Steering, Program, and Organization** (together with Scott A. Brandt): 3rd SRL/ISSDM Annual Research Symposium. Workshop tracks: Storage and Real-time Systems (co-chaired by Scott A. Brandt and Carlos Maltzahn), Knowledge Management (chaired by Yi Zhang), Analysis and Visual Exploration (co-chaired by Alex Pang and Bruno Sansó), and Human Computation (co-chaired by James Davis and Neoklis Polyzotis).

2011 **Session Chair** for "Reliability": 6th IEEE International Conference on Networking, Architecture, and Storage (NAS 2011);

2011 **Storage Track Program Co-Chair** (with Fang Wang, Huazhong University of Science and Technology): 6th IEEE International Conference on Networking, Architecture, and Storage (NAS 2011);

2011 **General Co-Chair** (with Garth Gibson, Carnegie Mellon University): 6th Parallel Data Storage Workshop in conjunction with Supercomputing 2011 (PDSW'11),

2011 **Steering Committee**: 6th Parallel Data Storage Workshop in conjunction with Supercomputing 2011 (PDSW'11);

2011 **Session Chair** for "MapReduce": 21st IEEE International Symposium on High-Performance Parallel Distributed Computing (HPDC 2012);

2011 **Program Committee**: 21st IEEE International Symposium on High-Performance Parallel Distributed Computing (HPDC 2012);

2010-2011 **Program Committee**: 9th USENIX Conference on File and Storage Technologies (FAST 2011);

2010 **Program Chair**: 5th Petascale Data Storage Workshop in conjunction with Supercomputing 2010 (PDSW'10);

2010 **Steering, Program, and Organization** (together with Scott A. Brandt): 2nd SRL/ISSDM Annual Research Symposium.

2010 **Advisor**: Ph.D. Workshop at Eurosys 2010.

2009-2010 **Program Committee**: 30th International Conference on Distributed Computing Systems (ICDCS 2010), Data Management and Data Centers Track.

2009 **Steering, Program, and Organization** (together with Scott A. Brandt): 1st SRL/ISSDM Annual Research Symposium.

2009 **Program Committee**: Workshop on Interfaces and Architectures for Scientific Data Storage (IASDS09) at IEEE Cluster 2009.

2008 **Program Committee**: International Workshop on Software Support for Portable Storage (IWSSPS 2008).

2007 **Program Committee**: The 2007 International Conference on Parallel Processing (ICPP-07); 3rd International Workshop on Storage Security and Survivability (StorageSS 2007).

Membership or Activities in Professional Associations

2005– USENIX, IEEE, ACM

2014– AAAS

Consulting

2014 **Expert Consultant in Litigation**, Quinn Emanuel, San Francisco, California

2008–2010 **Expert Consultant in Litigation**, DLA Piper, Palo Alto, California

1992 **Consultant**, State Department for Geography Munich (Geographische Landesamt München), Munich, Germany

1991–1992 **Instructor**, Frauenhofer Gesellschaft (FhG), Germany

Review/Referee Grants, Proposals, and Publications

2019 USENIX Annual Technical Conference (ATC'20).

2019 4th International Parallel Data Systems Workshop (PDSW'19).

2019 USENIX Annual Technical Conference (ATC'19).

2018 num26 ACM Symposium on Operating Systems Principles (SOSP 2019).

2018 28th International ACM Symposium on High-Performance Parallel and Distributed Computing (HPDC'19).

2018 3rd Joint International Workshop on Parallel Data Storage & Data Intensive Scalable Computing Systems (PDSW-DISCS'18).

2018 The International Conference for High Performance Computing, Networking, Storage, and Analysis (SC18).

2017 USENIX Annual Technial Conference (USENIX ATC '18).

2017 29th International Conference on Scientific and Statistical Database Management (SSDBM 2017).

2017 32nd International Conference on Massive Storage Systems and Technology (MSST 2017).

2016 Springer Handbook of Big Data Technologies.

2016 1st Joint International Workshop on Parallel Data Storage & Data Intensive Scalable Computing Systems (PDSW-DISCS'16).

2016 Parallel Computing (Elsevier).

2016 IEEE Cluster 2016.

2016 32nd International Conferenc on MassiveStorage Systems and Technology (MSST 2016).

2016 25th International ACM Symposium on High-Performance Parallel and Distributed Computing (HPDC'16).

2015 10th Parallel Data Storage Workshop in conjunction with Supercomputing 2015 (PDSW'15).

2015 CCGrid 2015.

2015 24th International ACM Symposium on High-Performance Parallel and Distributed Computing (HPDC'15).

2015	IEEE Cluster 2015.
2014	9th Parallel Data Storage Workshop in conjunction with Supercomputing 2014 (PDSW'14).
2014	3rd International Workshop on Data-Intensive Scalable Computing Systems in conjunction with Supercomputing 2014 (DISCS'14).
2014	2nd Workshop on Interactions of NVM/Flash with Operating Systems and Workloads (INFLOW '14)
2014	34th Annual ACM Symposium on Principles of Distributed Computing (PODC 2015)
2014	1st Programmable File Systems Workshop (PFSW'14) in conjunction with HPDC'14.
2014	Parallel Computing (Elsevier)
2013	Communications of the ACM
2013	U.S. Department of Energy, Office of Science, Advanced Scientific Computing Research (ASCR)
2013	5th Workshop on Interfaces and Architectures for Scientific Data Storage in conjunction with Cluster 2013 (IASDS 2013).
2013	2nd International Workshop on Data-Intensive Scalable Computing Systems in conjunction with Supercomputing 2013 (DISCS'13).
2013	8th Parallel Data Storage Workshop in conjunction with Supercomputing 2013 (PDSW'13).
2013	26th ACM and IEEE International Conference for High Performance Computing Networking, Storage, and Analysis (SC13).
2013	22nd International ACM Symposium on High-Performance Parallel and Distributed Computing (HPDC'13).
2012	U.S. Department of Energy, Office of Science, Small Business Innovation Research (SBIR).
2012	7th Parallel Data Storage Workshop in conjunction with SC12 (PDSW12)
2012	1st International Workshop on Data Intensive Scalable Computing Systems in conjunction with SC12 (DISCS12)
2012	21st International ACM Symposium on High-Performance Parallel and Distributed Computing (HPDC'12).
2012	Workshop on Interfaces and Abstractions for Scientific Data Storage in conjunction with Cluster 2012 (IASDS12).
2012	25th ACM and IEEE International Conference for High Performance Computing Networking, Storage, and Analysis (SC12).
2012	7th IEEE International Conference on Networking, Architecture, and Storage (NAS 2012).
2011	IEEE Transactions on Parallel and Distributed Systems
2011	24th ACM and IEEE International Conference for High Performance Computing Networking, Storage, and Analysis (SC11).
2011	6th IEEE International Conference on Networking, Architecture, and Storage (NAS 2011).
2010-2011	9th USENIX Conference on File and Storage Technologies (FAST 2011)
2010	5th Petascale Data Storage Workshop in conjunction with Supercomputing 2010 (PDSW'10).
2010	30th International Conference on Distributed Computing Systems (ICDCS 2010).
2009	Workshop on Interfaces and Architectures for Scientific Data Storage (IASDS09).
2009	IEEE Symposium on Field Programmable Custom Computing Machines (FCCM 09).
2009	NSF High-End Computing University Research Activity (HECURA) Program.

2008 16th Annual Meeting of the IEEE International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS 2008).

International Workshop on Software Support for Portable Storage (IWSSPS 2008).

2007 The 2007 International Conference on Parallel Processing (ICPP-07).

3rd International Workshop on Storage Security and Survivability (StorageSS 2007).

NSF Major Research Instrumentation (MRI) Program.

2005 4th Conference on File and Storage Technologies (FAST'05).

UNIVERSITY SERVICE

Service to the Division

2018 – 2021 **Director of the Center for Research in Open Source Software**, a 30% Faculty Administrator appointment.

2017 Fall **Hiring Manager** for CROSS Assistant Project Scientist Jeff LeFevre

2017 Fall **Hiring Manager** for CROSS Assistant Spcialist Philip Kufeldt

2016 Fall **Hiring Manager** for CROSS Assistant Project Scientist Jeff LeFevre

2016 Spring **Hiring Manager** for CROSS Administrative Assistant Lavinia Preston

2016 Spring **Hiring Manager** for CROSS Assistant Director Stephanie Lieggi

2015 – 2018 **Director of the Center for Research in Open Source Software**, a 30% Faculty Administrator appointment.

2014 **Founder of the Center for Research in Open Source Software**, recruited three founding members of industry paying $100,000 per year each.

2014 **Search Committee** for faculty position at the Department for Applied Mathematics and Statistics chaired by Nic Brummel, with Pascale Garaud, Hongyun Wang, David Draper, and Joel Primack (Department of Physics).

2013 – **Computer Game Design Program Faculty** Responsibility for oversight of the degrees BS for "Computer Science: Computer Game Design" and MS for "Games and Playable Media."

2011 – 2013 **Computer Game Design Program Faculty** Responsibility for oversight of the degrees BS for "Computer Science: Computer Game Design" and MS for "Games and Playable Media."

2012 **Evaluation Committee** for vendor bids for the NSF-funded Hyades astrophysics supercomputer system. Chaired by Piero Madau and Nancy Nieblas.

Service to the Department

2018 **Informal Consultant** for department adjunct appointment.

2017 **Search Committee** for faculty position at the Department for Computer Science chaired by Peter Alvaro, with Cormac Flanagan.

MENTORING AND STUDENT ADVISING

Note: All entries relevant to the review period are in the new biobib format. Most of the non-relevant entries are still in the old format for continuity.

Postdoctoral Scholars

Dates	Relationship	Degree Year	Name and Activities
2019 Spring – Present	Primary Supervisor		Postdoc Kate Compton, CROSS Fellow
2010 – 2012	Informal Mentor		Dr. Kleoni Ioannidou, Software Engineer at TidalScale

Doctoral Sudents

Dates	Relationship	Degree Year	Name and Activities
2018 Fall – Present	Primary Advisor		Kathryn Dahlgren
2017 Fall – Present	Primary Advisor		Xiaowei Chu
2017 Fall – 2019 Summer	Primary Advisor	2019	Reihaneh TorkzadehMahani, TU Munich
2016 Fall – 2019 Summer	Primary Advisor	2019	Reza NasiriGerdeh
			2019 Winter **Chair**: Masters Project Reading Committee
2016 Fall – Present	Primary Advisor		Yiming Zhang
2016 Winter – Present	Primary Advisor		Jianshen Liu
2013 Winter – 2019 Spring	Primary Advisor	2019	Ivo Jimenez, CROSS Fellow
			2019 Spring **Chair**: Dissertation Reading Committee
			2014 Summer **Member**: Qualifying Exam Committee
			2013 Fall **Member**: Masters Project Reading Committee
2011 Fall – 2018 Winter	Primary Advisor	2018	Latchesar Ionkov, Los Alamos National Laboratory
			2018 Winter **Chair**: Dissertation Reading Committee
			2014 Summer **Member**: Qualifying Exam Committee

Dates	Relationship	Degree Year	Name and Activities
2013 Fall – Winter 2018	Primary Advisor	2018	Michael Sevilla, TidalScale 2018 Winter **Chair**: Dissertation Reading Committee 2014 Spring **Member**: Qualifying Exam Committee
2009 Winter – 2018 Winter	Primary Advisor	2018	Noah M. Watkins, Red Hat 2018 Winter **Chair**: Dissertation Reading Committee 2013 Fall **Member**: Qualifying Exam Committee
2013 Summer – 2016 Summer	Primary Advisor	2016	Andrew Shewmaker, OpenEye Scientific Software 2016 Summer **Chair**: Dissertation Reading Committee 2010 Fall **Member**: Qualifying Exam Committee 2009 **Member**: Masters Thesis Reading Committee
2011 Winter – 2015 Summer	Primary Advisor	2015	Adam Crume, Google 2015 Summer **Chair**: Dissertation Reading Committee 2013 Fall **Member**: Qualifying Exam Committee
2013 Winter – 2014 Summer	Co-Advisor	2014	Dimitris Skourtis, IBM Almaden 2014 Summer **Co-Chair**: Dissertation Reading Committee
2009 Winter – 2014 Spring	Co-Advisor	2014	Joe Buck, Okera 2015 Spring **Co-Chair**: Dissertation Reading Committee 2012 Fall **Member**: Masters Project Reading Committee 2012 Summer **Member**: Qualifying Exam Committee

Dates	Relationship	Degree Year	Name and Activities
2015 Fall – Present	Other Advisor		James Mathewson, Akamai 2015 Fall **Member**: Qualifying Exam Committee
2015 Summer – 2016 Fall	Other Advisor	2016	Maziar Barijough, Gigamon 2015 Summer **Member**: Qualifying Exam Committee
2014 Winter – 2017 Spring	Other Advisor	2017	Spencer Sevilla, University of Washington 2017 Spring **Member**: Dissertation Reading Committee 2014 Winter **Member**: Qualifying Exam Committee
2013 Summer – 2015 Summer	Other Advisor	2015	Janelle Yong, Lachica Patent Services 2013 Summer **Member**: Qualifying Exam Committee
2012 Fall – 2014 Spring	Other Advisor	2014	Jingpei Yang, Samsung Electronics 2014 Spring **Member**: Dissertation Reading Committee 2012 Fall **Member**: Qualifying Exam Committee
2014 Spring	Other Advisor	2014	Jeff LeFevre, CROSS Fellow 2014 Spring **Member**: Dissertation Reading Committee 2012 Fall **Member**: Qualifying Exam Committee
2013 Spring	Other Advisor	2014	Greg Levin 2013 Spring **Member**: Dissertation Reading Committee 2010 Spring **Member**: Qualifying Exam Committee

Masters Sudents

Dates	Relationship	Degree Year	Name and Activities
2019 Fall – Present	Primary Advisor		Saloni Rane
2018 Winter – 2019 Winter	Primary Advisor	2019	Mariette Souppe, Adobe 2019 Winter **Chair**: Project Reading Committee
2017 Fall	Primary Advisor	2017	Zheyuan Chen, A9 2017 Fall **Chair**: Project Reading Committee
2017 Fall	Primary Advisor	2017	Haiyu Yang 2017 Fall **Chair**: Project Reading Committee
2016 Spring – 2017 Fall	Primary Advisor	2017	Bettie Jea, Dovetail Genomics 2017 Fall **Chair**: Project Reading Committee
2016 Winter – 2017 Spring	Primary Advisor	2017	Trivikram Bollempalli, Google 2017 Spring **Chair**: Project Reading Committee
2016 Spring – 2017 Winter	Primary Advisor	2017	Neha Ojha, Red Hat 2017 Winter **Chair**: Project Reading Committee
2016 Spring – 2017 Winter	Primary Advisor	2017	Greeshma Swaminathan, Veritas 2017 Winter **Chair**: Project Reading Committee
2016 Spring – 2017 Winter	Primary Advisor	2017	Husain Kassamnath, Wayfair
2016 Spring – 2016 Fall	Primary Advisor	2016	Abhishek Grover, Facebook 2016 Fall **Chair**: Project Reading Committee
2013 Winter – 2013 Summer	Primary Advisor	2013	Ranjan S. Venkatesh, Georgia Tech 2013 Summer **Chair**: Project Reading Committee
2018 Spring	Other Advisor	2018	Pinglei Luo 2018 Spring **Member**: Project Reading Committee
2017 Fall	Other Adivsor	2017	Ashutosh Raina, eBay 2017 Fall **Member**: Project Reading Committee
2016 Fall	Other Advisor	2016	Sanjana Maiya, Facebook 2016 Fall **Member**: Project Reading Committee
2016 Spring	Other Advisor	2016	Allison Hume, Wealthfront 2016 Spring **Member**: Project Reading Committee
2015 Fall	Other Advisor	2015	Poornima Raman, IBM Almaden 2015 Fall **Member**: Project Reading Committee

Senior Students

Dates	Relationship	Degree Year	Name and Activities
2017 Fall	Other Advisor	2017	Asha Karim, Salesforce 2017 Fall **Member**: Thesis Reading Committee

Doctoral Advisor

2011	Alexander Ames	*Efficient, Searchable, Graph-Structured File System Metadata Services*

Doctoral Dissertation Reading Committee Member

2012	Rosie Wacha	*Prof. Scott A. Brandt*
2012	David Bigelow	*Prof. Scott A. Brandt*
2011	Alexander Ames	*Prof. Carlos Maltzahn*
2010	Anna Povzner	*Prof. Scott A. Brandt*
2007	Sage Weil	*Prof. Scott A. Brandt*
2007	Joel Wu	*Prof. Scott A. Brandt*
2007	Timothy Bisson	*Prof. Scott A. Brandt*
2005	Feng Wang	*Prof. Scott A. Brandt*
2005	Bo Hong	*Profs. Darrell D. E. Long and Scott A. Brandt*

Doctoral Qualifying Exam Committee Member

2011	Varun Bhagwan	*Prof. Carlos Maltzahn*
2011	David Bigelow	*Prof. Scott A. Brandt*
2010	Roberto Pineiro	*Prof. Scott A. Brandt*
2009	Sasha Ames	*Prof. Carlos Maltzahn*
2009	Rosie Wacha	*Prof. Scott A. Brandt*
2008	Anna Povzner	*Prof. Scott A. Brandt*
2006	Sage Weil	*Prof. Scott A. Brandt*
2006	Timothy Bisson	*Prof. Scott A. Brandt*
2005	Bo Hong	*Profs. Darrell D. E. Long and Scott A. Brandt*

Informal Co-advisor to Continuing Graduate Students

2007-2008	Varun Bhagwan	Ph. D.	*Prof. Scott A. Brandt*
2006-2008	Ian Pye	Ph. D.	*Prof. Scott A. Brandt*
2006-2008	Esteban Molina-Estolano	Ph. D.	*Prof. Scott A. Brandt*
2006-2008	Alexander Ames	Ph. D.	*Prof. Ethan L. Miller*
2006-2008	Tim Kaldewey	Ph. D.	*Prof. Scott A. Brandt*
2005-2007	Sage Weil	Ph. D.	*Prof. Scott A. Brandt*

Informal Co-advisor to Graduated Masters of Science Students

2007	Eric La Londe	*Prof. Scott A. Brandt*	*A Charaterization of LANL HPC Systems*
2006	Nikhil Bobb	*Prof. Scott A. Brandt*	*The Graffiti Distributed Metadata Management System Client*

Masters of Science Thesis Reading Committee Member

2009	Andrew G. Shewmaker	*Prof. Scott A. Brandt*

Masters Project Reading Committee Member

2012	Roberto C. Pineiro	*Prof. Scott A. Brandt*
2012	Jason Aumiller	*Prof. Scott A. Brandt*
2012	David Seagal	*Prof. Jim Whitehead*
2011	Ben Lau	*Prof. Carlos Maltzahn*
2010	Jan Pieper	*Prof. Scott A. Brandt*
2010	Esteban Molina-Estolano	*Prof. Carlos Maltzahn*
2010	Maria Daltayanni	*Prof. Neoklis Polyzotis*
2010	Richa Khandelwal	*Prof. Neoklis Polyzotis*
2010	Greg Levin	*Prof. Scott A. Brandt*
2009	David Bigelow	*Prof. Scott A. Brandt*
2009	Latchesar Ionkov	*Prof. Scott A. Brandt*
2008	Suresh Iyer	*Prof. Scott A. Brandt*
2007	Jeff M. Hagen	*Prof. Ethan L. Miller*
2007	Anna Povzner	*Prof. Scott A. Brandt*
2007	Andrew W. Leung	*Prof. Ethan L. Miller*
2006	Kristal Pollack	*Prof. Darrell D. E. Long*
2006	Kevin Greenan	*Prof. Ethan L. Miller*
2006	Mark W. Storer	*Prof. Ethan L. Miller*
2006	Nikhil Bobb	*Prof. Scott A. Brandt*
2005	Rajya Lakshmi Hari	*Prof. David P. Helmbold*
2005	Ivan Dramaliev	*Prof. Scott A. Brandt*

COURSES TAUGHT

Undergraduate

Winter 2019	Open Source Programming
Winter 2017	Open Source Programming
Winter 2016	Open Source Programming

Graduate

Spring 2019	Storage Systems
Spring 2017	Storage Systems
Fall 2015	Distributed Systems
Spring 2015	Distributed Systems
Spring 2014	Storage Systems
Winter 2013	Seminar on Big Data Systems (co-taught with Scott A. Brandt)
Fall 2012	Storage Systems
Fall 2010	Seminar on Coalescing Analysis and Storage
Fall 2008	Seminar on Active Storage Systems (co-taught with Scott A. Brandt)
Winter 2007	Storage Systems